

PTO/SB/08a (08-03)

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Substitute for form 1449A/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(use as many sheets as necessary)


Sheet 1 of 5

Complete if Known

Application Number	10/771,331
Filing Date	February 5, 2004
First Named Inventor	Oriaw MASSLER
Art Unit	1762
Examiner Name	K. Stouffer
Attorney Docket Number	080313.48830D1

U.S. PATENT DOCUMENTS

U.S. PATENT DOCUMENTS

Examiner Initials ¹	Cite No. ¹	Document Number		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ³ (if known)				
/KMS/ 	AA	US- 4,992,153		02/12/1991	Bergmann et al.	
	AB	US- 5,556,519	A	09/17/1996	Teer	
	AC	US- 5,629,086	A	05/13/1997	Hirano et al.	
	AD	US- 5,695,832	A	12/09/1997	Hirano et al.	
	AE	US- 5,709,784	A	01/20/1998	Braendle et al.	
	AF	US- 5,712,000	A	01/27/1998	Wei et al.	
	AG	US- 5,750,210	A	05/12/1998	Schmidt et al.	
	AH	US- 6,338,881	B1	01/15/2002	Sellschopp et al.	
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	AJ	US- 6,372,303	B1	04/16/2002	Burger et al.	
	AK	US- 2003/0091742	A1	05/15/2003	Forget et al.	
	AL	US- 5,015,494		05/14/1991	Yamazaki	
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	AN	US- 4,869,923		09/26/1989	Yamazaki	
	AO	US- 4,877,505		10/31/1989	Bergmann	
	AP	US- 6,171,454	B1	01/09/2001	Weber et al.	

Examiner
Signature

/Kelly Stouffer/

Date
Considered

03/29/2007

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		First Named Inventor	Orlaw MASSLER		
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		Examiner Name	K. Stouffer		
Sheet	2	of	5	Attorney Docket Number	080313.48830D1

FOREIGN PATENT DOCUMENTS						
Examiner Initials ¹	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD- YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T ⁶
		Country Code ³ -Number ⁴ -Kind Code ⁵ (if known)				
/KMS/	AQ	DD 133688	01/17/1979	Siehe		
	AR	DE 195 13 614 C1	10/02/1996	Fraunhofer GES Forshung et al.		ABS
	AS	DE 196 35 736 C2	03/05/1998	Saxonia Umformtechnik GmbH	Corresponds to AH	ABS
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	AW	DE 38 76 120 T2	06/24/1993	Semiconductor Energy Laboratory Co., Ltd.	Corresponds to AL, AM & AN	ABS
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	BJ	WO 97/34315 A1	09/18/1997	Balzers Aktiengesellschaft	Corresponds to AE	ABS
	BK	WO 99/14390 A3	03/25/1999	Robert Bosch GmbH	Corresponds to AQ	ABS
	BL	WO 99/27893 A2	06/10/1999	Teer Coatings Limited		

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		First Named Inventor	Orlaw MASSLER
		Art Unit	1762
		Examiner Name	K. Stouffer
		Attorney Docket Number	080313.48830D1
Sheet	3	of	5

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
/KMS/	BM	K. TAUBE, "Carbon-based coatings for dry sheet-metal working", Elsevier Science S.A., Surface and Coatings Technology, 1998, vol. 98, pp. 976-984	
	BN	A. A. VOEVODIN et al., "Design of a Ti/TiC/DLC/ functionally gradient coating...", Elsevier Science S.A., Thin Solid Films, 1997, Vol. 298, pp. 107-115	
	BO	Y. LIFSHITZ, "Diamond-like carbon - present status", Elsevier Science S.A., Diamond and Related Materials, 1999, Vol. 8, pp. 1659-1676	
	BP	ALFRED GRILL, "Diamond-like carbon: State of the art", Elsevier Science, S.A., Diamond and Related Materials, 1999, Vol. 4, pp. 428-434	
	BQ	J. DENG et al., "DLC multilayer coatings for wear protection", Elsevier Science S.A., Diamond and Related Materials, 1995, pp. 936-943	
	BR	W. HEINKE et al., "Evaluation of PVD nitride coatings, using impact, scratch and Rockwell-C adhesion tests", Elsevier Science S.A., Thin Solid Films, 1995, Vol. 270, pp. 431-438	
	BS	K. Y. LI et al., "Mechanical and tribological properties of diamond-like carbon films prepared on Steel by ECR-CVD process", Elsevier Science S.A., Diamond and Related Materials, 2001, Vol. 10, pp. 1855-1861	
	BT	T. MICHLER et al., "Mechanical properties of DLC films prepared by bipolar pulsed DC PACVD", Elsevier Science S.A., Diamond and Related Materials, 1998, Vol. 7, pp. 1333-1337	
	BU	B. ORAL et al., "Adhesion and structural changes of multi-layered and multi-doped a-C:H films during annealing ¹ ", Elsevier Science S.A., Diamond and Related Materials, 1996, Vol. 5, pp. 932-937	
	BV	M. GRISCHKE et al., "Variation of the wettability of DLC-coatings by network modification using silicon and oxygen", Elsevier Science S.A., Diamond and Related Materials, 1998, Vol. 7, pp. 454-458	
✓	BW	M. GRISCHKE et al., "Application-oriented modifications of deposition processes for diamond-like carbon based coatings", Elsevier Science, S.A., Surface and Coatings Technology, 1995, Vol. 74-75, pp. 739-745	

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Sheet	4	of	5

NON PATENT LITERATURE DOCUMENTS

/KMS/	BX	T. MICHLER et al., "Continuously deposited duplex coatings consisting of plasma nitriding and a C:H:Si deposition ¹ ", Elsevier Science S.A., Surface and Coatings Technology, 1999, Vol. 111, pp. 41-45	
	BY	PHILIP M. RICE et al., "Correlation of Nanoindentation and Conventional Mechanical Property Measurements", IBM Almaden Research Center, San Jose, CA, USA/Oak Ridge National Laboratory, Oak Ridge, TN, USA	
	BZ	T. MICHLER et al., "DLC Films deposited by bipolar pulsed DC PACVD", Elsevier Science S.A., Diamond and Related Materials, 1998, Vol. 7, pp. 459-462	
	CA	K. TAUBE et al., "Improvement of carbon-based coatings for use in the cold forming of non-ferrous metals", Elsevier Science S.A., Surface and Coatings Technology, 1994, Vol. 68-69, pp. 662-668	
	CB	D. HOFMANN et al., "Plasma-booster-assisted hydrogenated W-C coatings", Elsevier Science S.A., Surface and Coatings Technology, 1995, Vol. 73, pp. 137-141	
	CC	U. MUELLER et al., "Pores in hydrogenated amorphous carbon films on stainless steel", Elsevier Science S.A., Surface & Coatings Technology, 1995, Vol. 71, pp. 233-238	
	CD	C. DONNET, "Recent progress on the tribology of doped diamond like and carbon alloy coatings: a review", Elsevier Science S.A., Surface and Coatings Technology, 1998, Vol. 100-101, pp. 180-186	
	CE	A. VARMA et al., "Tribological Behaviour of Si-DLC Coatings", Surface Engineering, 1999, Vol. 15, No. 4, pp. 301-306	
	CF	VON H. DIMIGEN, "Neue Ansätze zur wirtschaftlichen Fertigung optimierter Schichtsysteme", Fraunhofer Institut fuer Schicht- und Oberflächentechnik IST, Galvanotechnik, Heft 5, 1998	
	CG	A. HIEKE, "Diamantaehnliche Kohlenstoffschichten (DLC) - verschleissfest and reibarm", Materialwissenschaften und Werkstofftechnik, 2000, Vol. 31, pp. 625-628	

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Sheet	5	of	5	Attorney Docket Number	080313.48830D1

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/KMS/	CH	"Hardness Conversion Chart", NDT Resource Center, Hardness Testing, ASM Internationals, Metals Park, OH, 1987	
	CI	VON U. MUELLER et al., "Ultrahartstoff-Beschichtungen aus Kohlenstoff", Oberflaechen Werkstoffe	
	CJ	T. KRUMPIEGL, (Lehrstuhl fuer Konstruktionstechnik) "Vermeidung von Schmierstoffen in Gelenklagern durch PVD-Beschichtungen", Bundesministerium fuer Bildung, Wissenschaft, Forschung und Technologie, Abschlussbericht 1997	
	CK	"Produktamenverzeichnis-Kohlenstoffschichten", Fraunhofer Institut fuer Schicht und Oberflaechentechnik, 2006	
	CL	A. HAMMER et al., "Physikalische Formeln und Tabellen", J. Lindauer Verlag, 5., Seite 42-43, Auflage, 1992	
	CM	RENÉ A. HAEFER, "Oberflaechen - und Duennschicht-Technologie", Teil 1, Springer-Verlag Berlin Heidelberg New York, 1987	
	CN	"Metallic and other inorganic coatings - Vickers and Knoop microhardness tests", Mikrohaeteproofungen nach Vickers und Knoop, DIN EN ISO 4516, pp. 1-16 (2002)	
	CO	"Coating (CVD, PVD) of cold forging tools", Beschichten von Werkzeugen der Kaltmassivumformung CVD-und PVD-Verfahren, VDI 3198, pp. 1-8 August 1992	
	CP	"PVD and CVD hard coatings - quality assurance inspection planning of hard coatings", Qualitaetssicherung bei der PVD - und CVD-Hartstoffbeschichtung, VDI 3824 Blatt 4, S. 12, Abs. 4.4, pp. 1-10 September 1999	
V	CQ	European Search Report dated September 3, 2003 with an English translation of the pertinent portion (Five (5) pages).	

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